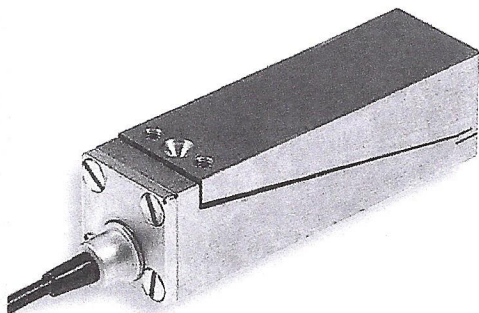


P-287

Vertical/Tilt Piezo Flexure Stage



P-287.70 Flexure NanoPositioner

Application Examples

- Wafer inspection
- Nanopositioning
- Medical analysis
- Biology
- Optics

Ordering Information

P-287.70

Vertical /Tilt Piezo Flexure Stage,
12 mrad, 700 μ m

Options:

P-703.20

High-Vacuum Modification,
see page 1-40, "PZT Actuators"
section

**Custom Designs
for Volume Buyers**

- Vertical Travel to 700 μ m
- Tilt to 0.7 degrees
- Non-Magnetic Stainless Steel Design

The P-287 is a high-resolution, piezoelectrically driven flexure stage providing tilt up to 12 mrad and vertical travel up to 700 μ m at the tip. A ball seat is machined into the tip to decouple any rotation if the P-287 is used as a linear drive. In that case an external guiding system is recommended (e.g. frictionless diaphragm spring).

Working Principle

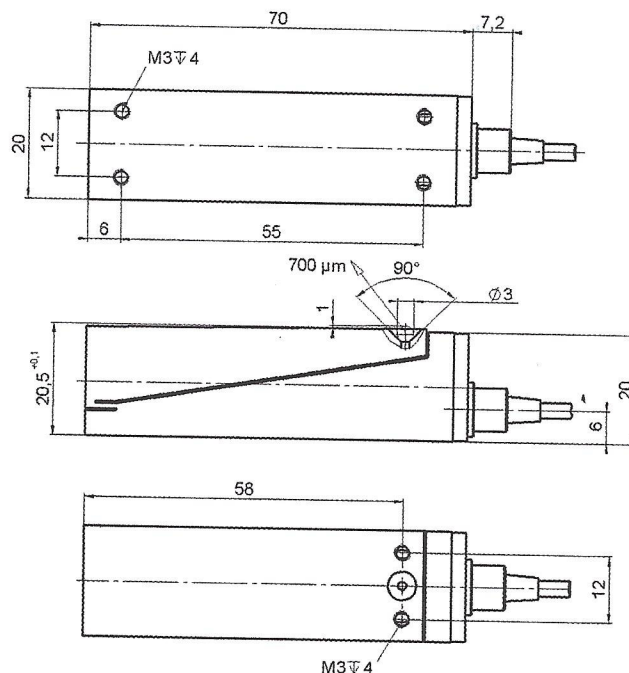
P-287 positioners are equipped with high-voltage piezoelectric drives (0 to -1000 V) integrated into a zero stiction/friction, ultra-high-resolution, wire-EDM-cut flexure motion amplifier system. The linear motion of the piezo translator produces an arc motion of the tip.

Technical Data

Models	P-287.70	Units	Notes see p. 2-44
Active axes	θ_{xy} (Z)		
Open-loop travel @ 0 to -1000 V	12 (700)	mrad (μ m at tip) $\pm 20\%$	A4
** Open-loop resolution \leq	0.2 (7)	μ rad (nm at tip)	C0
Stiffness (in operating direction)	0.13 (at tip)	N/ μ m $\pm 20\%$	D1
Push/pull force capacity (in operating direction)	80/10	N	D3
Electrical capacitance	290	nF $\pm 20\%$	F1
* Dynamic operating current coefficient (DOCC)	30 [0.5 / Hz \times μ m at tip]	μ A/(Hz \times mrad)	F2
Unloaded resonant frequency	380	Hz $\pm 20\%$	G2
Operating temperature range	- 40 to 80	$^{\circ}$ C	H2
Voltage connection	VH		J1
Weight (with cables)	195	g $\pm 5\%$	
Body material	N-S		L
Recommended Amplifier/Controller (codes explained p. 6-46)	B, I		

* Dynamic Operating Current Coefficient in μ A per hertz and mrad (μ m).
Example: Sinusoidal scan of 10 mrad at 10 Hz requires approximately 3 mA drive current.

** Resolution of PZT NanoPositioners is not limited by friction or stiction.
Noise equivalent motion with E-507 amplifier



P-287.70 dimensions (in mm)

Notes

See the "PZT Control Electronics" section for our comprehensive line of low-noise modular and OEM control electronics for computer and manual control.